G7– Priority Junctions – Side Street Crossings

Amendments:

Priority Junctions

Priority arrangements are put in place at most crossroads and T-junctions where traffic signals are not required. Vehicle priority is given to traffic moving along the major road with the use of Give Way or Stop Lines and signs.

Design principles

- Locate crossings on pedestrian desire lines.
- Minimise corner radii to reduce vehicle turning speeds.
- Minimise street clutter (note that there is a presumption against the use of guardrails).
- Consider continuous footway, raised table or build-outs to increase pedestrian priority.
- Consider retaining original road features (kerb lines and particularly surface materials where practicable) in the World Heritage Site and Conservation Areas as long as they support other design principles and the Council's commitment to pedestrian and cycle priority (see Page 11).

Crossing width

Crossing widths should safely and comfortably accommodate the observed/expected pedestrian flows on footways.

- Normal minimum: full width of footway.

Carriageway design

- For new minor streets, provide a one-lane approach to the junction as standard.
- Provide a right turn lane only if motor vehicle flow on the minor street is anticipated to be high and traffic modeling identifies issues of congestion.
- Build-outs may be used to reduce the overall crossing distance over side roads (should be considered for carriageways with clear width >6.5m).

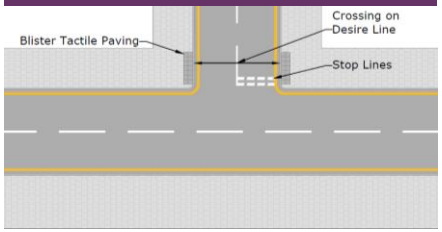
Cycling provision

- Continue cycling facilities across the side road and integrate with side road provision in accordance with cycling design standards.

Drainage

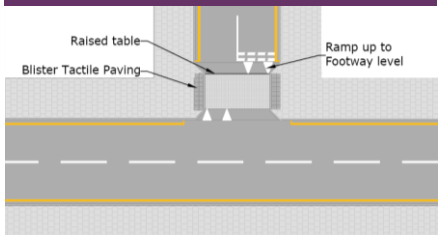
- Use CCTV drainage surveys to determine drainage design where extensive changes are planned.
- Relocate existing gullies if required to avoid having drains on crossings.

Crossing on desire lines



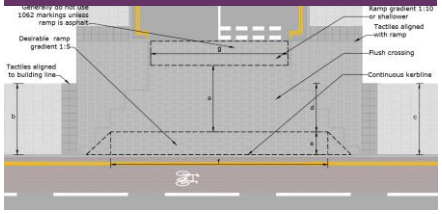
DWG Ref: CF-DR-C-0020

Raised table with build-out



DWG Ref: CF-DR-C-0021

Continuous footway



DWG Ref: CF-DR-C-0011

Relevant Factsheets:

Crossings at or near junctions (G5)
Minimising Street Clutter (P7)
Pedestrian Desire Lines (P2)
Cycle Lanes – Integration with Side Roads (C2)
Speed Reduction &Traffic Management (G6)
Corner Radii (G6)
Drainage (W2)

Side Street Crossing Types

Types

- **Continuous footways** and **raised tables** are the preferred option as they provide a high level of priority for pedestrians; **Where these are not used** (for example for cost reasons), **kerbs should always be dropped on the direct pedestrian desire line**. (ie not requiring deviation into side street)
- **Standard dropped kerbs** will be used in many locations when pedestrian flow is lower – reducing corner radii should always be considered.
- **Build-outs** should be considered to reduce carriageway widths and pedestrian crossing distances; and
- **Refuge islands** should be considered to reduce pedestrian crossing distance where build-outs are not suitable. They should be provided on busy roads where the carriageway is in excess of 10m wide and two-stage crossing is required. Keep left signs or lighting on the island may be omitted (TSRGD, 2016).

See Pages 3 and 4 for a table and decision trees providing guidance on the use of different crossing types.

Continuous footway, Leith Walk

City of Edinburgh Council

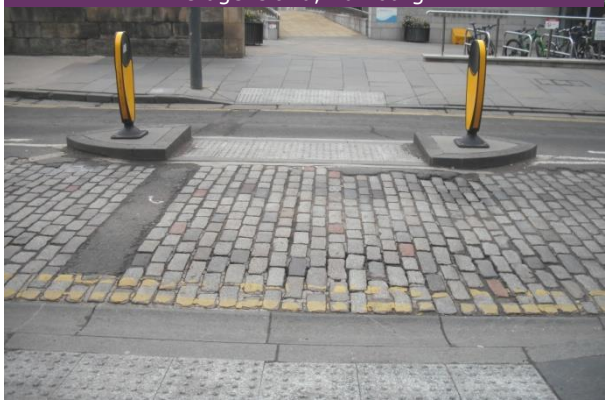
Build-out, Stafford Street, Edinburgh

Google Maps, 2017

Raised tables

Google Maps, 2017

Refuge island, Edinburgh



The City of Edinburgh Council

Relevant Factsheets:

Crossings at or near junctions (G5)
Speed Reduction & Traffic Management (G6)
Refuge Islands (G4)
Crossings (G4)
Corner Radii (G6)

Crossing Types Guidance

The tables on this page provide guidance as to the crossing type to be used in different situations. However it must be noted that at the busiest junctions, signals may be employed to control traffic and/or provide crossing opportunities.

Major Street		Strategic or Secondary (30mph)							Strategic or Secondary (20mph)							Local						
Place Type		R/NF	IE	LDR	MDR	HDR	SSE	R/HS	R/NF	IE	LDR	MDR	HDR	SSE	R/HS	R/NF	IE	LDR	MDR	HDR	SSE	R/HS
Minor Street	Strategic	1	1	1	1	2	2	2	1	1	1	1	2	2	2							
	Secondary	1	1	1	1	2	2	2	1	1	1	1	2	2	2							
	Local	3	3	4	4	4	5	5	3	3	4	4	5	5	5	3	3	4	4	4	4	5

Key:
R/NF – Rural Road / No Frontage
IE – Industrial Employment
LDR – Low Density Residential
MDR – Medium Density Residential
HDR – High Density Residential
SSE – Service Sector Employment
R/HS – Retail / High Street

Ref.	Suggested side Road Crossing Type
1	Dropped crossing but consider the need for build-outs or refuge islands.
2	Normally dropped crossing but consider raising the entire junction.
3	Normally dropped crossing but consider raised entry treatment for higher use footways/cycle routes.
4	See side road decision tree A.
5	See side road decision tree B.

Relevant Factsheets:

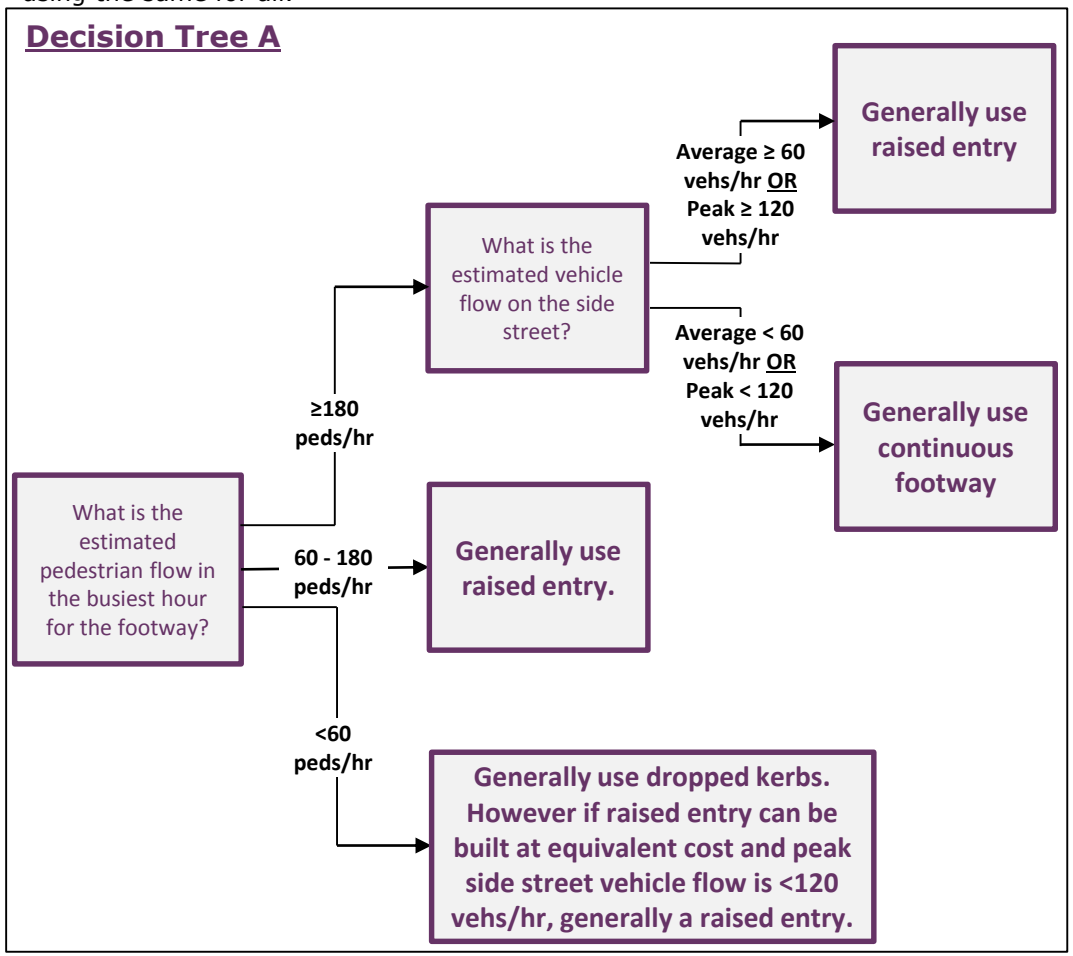
Crossings at or near junctions (G5)
Speed Reduction & Traffic Management (G6)
Refuge Islands (G4)
Crossings (G4)
Corner Radii (G6)

Crossing Types Guidance – Decision Trees

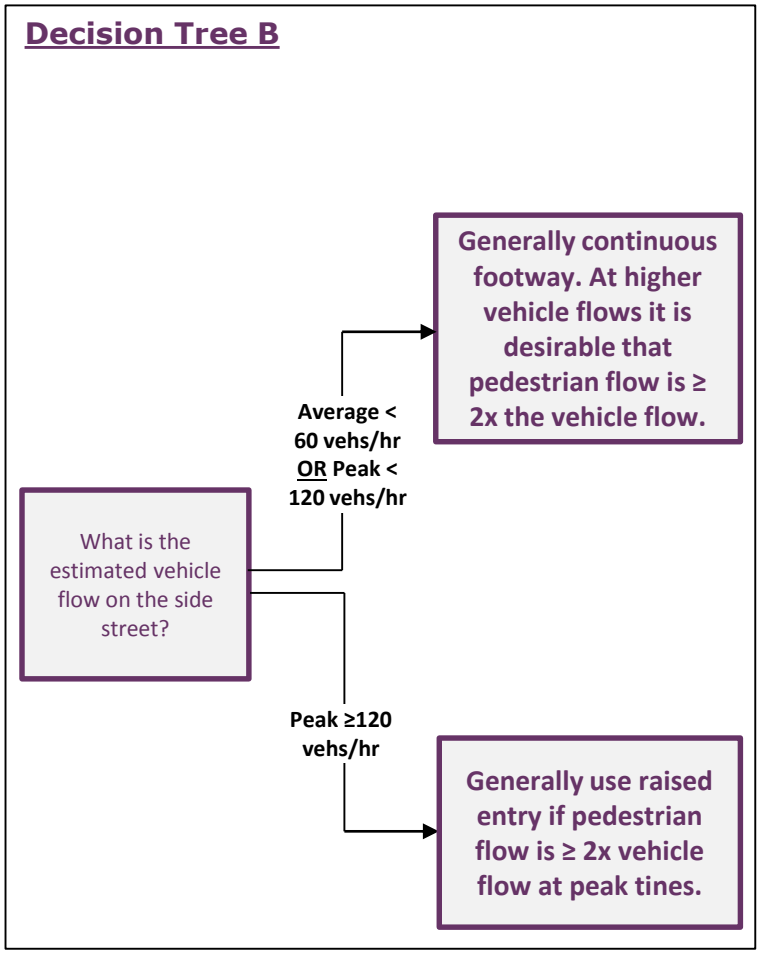
Consistent Treatments of Side Streets

Use these decision trees for guidance on crossing types, but when dealing with two or more side roads, there should be a presumption in favour of using the same for all.

Decision Tree A



Decision Tree B



Relevant Factsheets:

Crossings at or near junctions (G5)
Speed Reduction & Traffic Management (G6)
Refuge Islands (G4)
Crossings (G4)
Corner Radii (G6)

Uncontrolled Drop Kerb Crossings

These basic crossings aid people crossing the road by dropping the kerb or raising the carriageway to help make crossing the road easier for everyone.

Typical locations

- At road junctions to help pedestrians cross the side street to continue their journey.
- At strategic points on a busy street where there is no need for a controlled crossing such as a zebra or puffin.
- Crossings should always be on pedestrian desire lines, see factsheet G4 for further details.

Waiting / loading restrictions

- Double yellow lines or white bar markings can be used across a crossing point to help avoid parking along a dropped kerb crossing.
- They should always be used in situations where parking appears to be likely.

Selection

Uncontrolled drop kerb crossings are most likely to be appropriate for locations where there is a short crossing distance and relatively low levels of pedestrian and/or motor traffic. Factsheet G4 provides more detail on the crossing selection process and the factors that must be considered.

Details

Factsheet G4 provides more information about the detailing of uncontrolled dropped kerb crossings. However in general:

- Tactile paving must be used at all crossing points in a contrasting grey colour.
- They must be situated on pedestrian desire lines.
- The should have a width of not less than 1.8m.

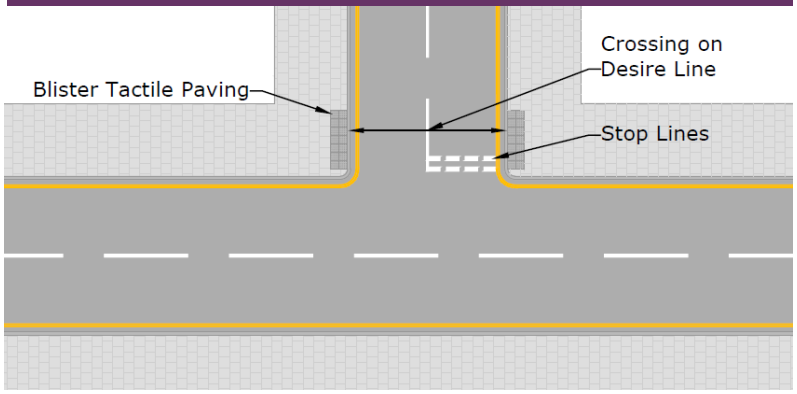
Uncontrolled dropped kerb crossing on build out, Bruntsfield

The City of Edinburgh Council

Uncontrolled dropped kerb crossing, Kirkliston

The City of Edinburgh Council

Uncontrolled dropped kerb crossing with tactile paving – Note: Crossing should remain on desire line even when this means putting the tactile paving on the radius.



DWG Ref: CF-DR-C-0020

Relevant Factsheets:

Crossings at or near junctions (G5)
Minimising Street Clutter (P7)
Pedestrian Desire Lines (P2)
Cycle Lanes – Integration with Side Roads (C2)
Speed Reduction &Traffic Management (G6)
Crossings (G4)
Corner Radii (G6)
Drainage (W2)

Raised tables

Raised tables are used to give increased pedestrian priority at side road crossings- though they retain a clear carriageway and as such do not send such a strong signal of pedestrian priority as a continuous footway.

- Likely to be more suitable than a continuous footway where side road traffic is medium to high (i.e. over approx. 60 average, 120 peak vehicles per hour).
- The ramp approach from the major street should be as steep as possible to slow turning vehicles and maintain pedestrian desire lines; typically 1:5 to 1:10 gradient (1:20 on bus routes).
- Where existing kerb height is >75mm, carriageway or footway heights should be adjusted, generally aiming for the side road entry not exceeding a 75mm rise above carriageway level. This is to enable a steep ramp with minimal grounding risk.

Build-outs

- Build-outs may be introduced on existing side roads or as part of new minor street layouts, to reduce carriageway widths and pedestrian crossing distances. Where appropriate they may be used to accommodate street furniture and/or tree planting.
- Build-outs should be considered for streets where new traffic management arrangements (such as one-way working) are to be employed, on-street parking is to be introduced, or where a pedestrian safety issue has been identified.
- Build-outs are composed of the same surface material as the adjacent footway, drainage channels are detailed accordingly.

Note
In the World Heritage Site (WHS), for obvious reasons it is important that original features are retained and that development is particularly sympathetic to the surroundings. Therefore where there are historic kerb lines in the WHS, these should be retained.

A raised table side road entry treatment in London

TfL Streetscape Guidance, 2015

A side road build out on Lorne Street/Leith Walk, Edinburgh

Google Maps, 2017

Relevant Factsheets:
Crossings (G4) Speed Reduction & Traffic Management (G6) Promoting Pedestrian Movement and Activity (P2)

Continuous Footways

A continuous footway surface should be considered across minor side street junctions, particularly where there are medium or high pedestrian flows and low vehicle flows on the side street.

Continuous footways have considerable potential to improve conditions for pedestrians. As such they are particularly appropriate in streets such as:

- Retail / High Street
- Service Sector Employment
- High Density Residential
- Other streets with a high pedestrian flow

It is likely to be helpful (e.g. for driver and pedestrian understanding) if a series of side roads on the same street all have a similar continuous footway treatment.

The table on page 3 indicates where continuous footways should be considered in Edinburgh.

Guidance on flows for continuous footways:

- Generally the minor street will be a local route with low levels of traffic (particularly HGVs) – average flow of approx 60 per hour or less (peak 120 per hour).
- Generally the major street will have medium or high pedestrian flows (likely in excess of 180 pedestrians/ peak hour), or otherwise be important for pedestrians.

Continuous footways are treated as road humps and should be designed such that they comply with The Road Humps (Scotland) Regulations 1998 and The Road Humps and Traffic Calming (Scotland) Amendment Regulations 1999.

Clapham Old Town, London

Google Maps

Clapham Old Town, London

Jacobs

Legal Status

Despite their resemblance to a point closure, continuous footways should be considered part of the public carriageway and therefore Rule 170 of the Highway Code applies: pedestrians only have priority over vehicles once they have stepped onto the crossing.

Note that the design of crossings with no kerb upstand or tactile paving, means that pedestrians, particularly children or those with visual impairments will assume priority and may not notice the side road. The layout therefore places the onus on the motorist to take care when approaching the junction. For this reason, continuous footways are most appropriate where both the major street and minor street are designated as 20mph. If the main road has a 30mph speed limit they may also be considered on a case by case basis.

Relevant Factsheets:

Crossings (G4)
Hard Segregation – Integration with Side Roads (C4)
Cycle Lanes – Integration with Side Roads (C2)
Soft Segregation – Integration with Side Roads (C3)

Continuous Footways: Layout and Ramp Gradients

Appropriate side road clear carriageway width for continuous footway implementation:

- Min 3.50m one-way, to allow contra-flow cycling
- Min 4.5m – (desirable Max 6.5m) two-way. Note: continuous footways are likely to be less effective in delivering assumed pedestrian priority where the crossing area is wide.

Road Safety Audits and Equality Impact Rights Assessments are standard requirements.

In the World Heritage site consideration should be given to indicating the historic kerb line, most likely by retaining a kerb embedded in the new continuous footway feature.

Tactile Paving

There is a presumption in favour of the use of tactile paving at continuous footway crossings. However, where the two way traffic flow is less than 20 veh./hr and the carriageway width over the ramp is less than 5m, tactile paving can be omitted.

Two design approaches (for further information, see the **Design Details Options** factsheets on the following pages) can be considered depending on the setting:

1. Continuous footway with ramped approach on both sides
2. Continuous kerbline and no ramp on the major street side

The ramp approach from the major street should be as steep as possible to:

- Slow down turning vehicles
- Ensure adequate footway clear width on crossing width.
- Maintain the pedestrian desire line

A steep ramp of around 1:5 is desirable. However care should be taken to minimise the risk of vehicle grounding.

Clapham Old Town: 300x600 Yorkstone slabs used for carriageway areas. However the contrast in tone between the two areas is undesirable.

The City of Edinburgh Council

Steep ramp gradients are inappropriate where they are likely to be used by buses. In this case the gradient should be approx. 5.5% (i.e. 1.8m for a 100mm ramp, 1.35m for a 75mm ramp).

Signs and Markings

- Give Way road markings to be provided as per design detail drawings.
- However these may be omitted altogether on streets with very low traffic volumes.
- Where vehicle count exceeds 60/hour or significant numbers of large vehicles are expected markings may be included on both ramps.
- There is generally a presumption against the use of bollards to delineate the crossing. Street furniture may be considered on wider streets to provide some delineation.

Relevant Factsheets:

Crossings at or near junctions (G5)
Block Paving (M3)
Footway Materials & Surfacing (M1)
Design Details: Option 1 (G7)
Asphalt Footway (M2)
Design Details: Option 2 (G7)

Design Details : Layout Option 1

Continuous footway with ramped approach on both sides

- Suitable for two-way or one-way side streets.

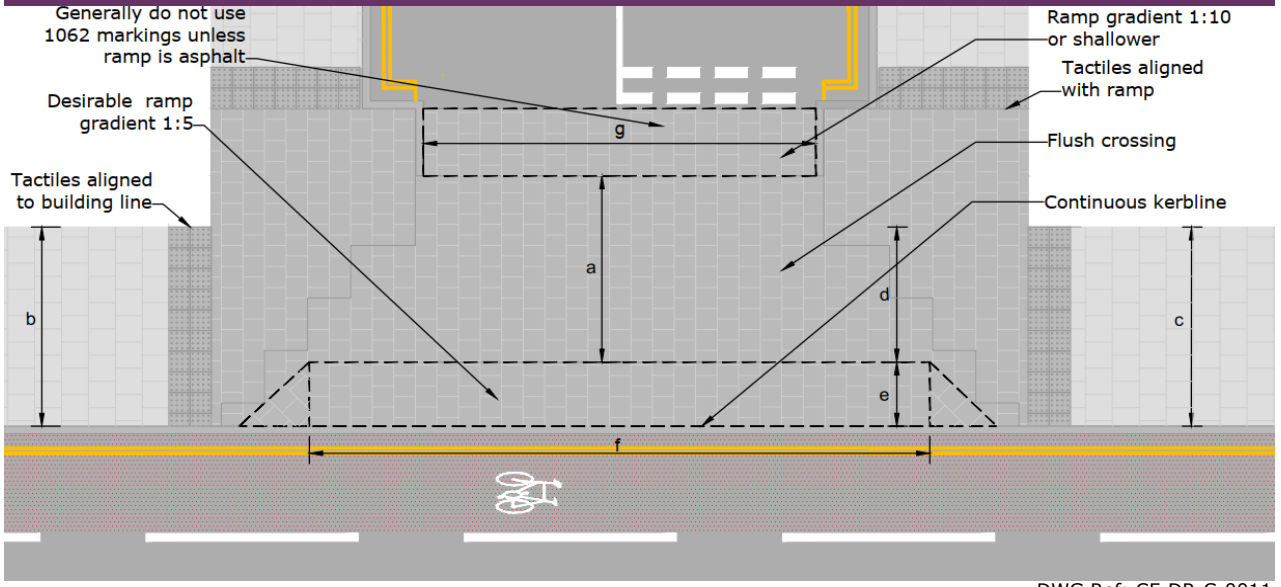
Crossing width (a)

- The width over the continuous footway (a) should not be less than the width of the approaching footways (whichever is the greater of b or c)
- The ramp approach from the major street should maximise dimension (d) – i.e. the width of the continuous footway walking surface measured forwards from the building or wall line, and minimise dimension (e). To reduce the speed of turning vehicles the ramp should be as steep as possible (1:5 is desirable). This gradient may need to be varied to avoid grounding issues.

Ramp widths

- Width (g) should generally be 4.5m to 6.5m with appropriate build-outs to achieve this. Where it is less than 5m and two-way vehicle flow is <20 p/h, tactile paving can be omitted.
- Width (f) should generally be 2-4m greater than width (g) to allow for vehicle turning circles.

Continuous footway with ramped approach on both sides

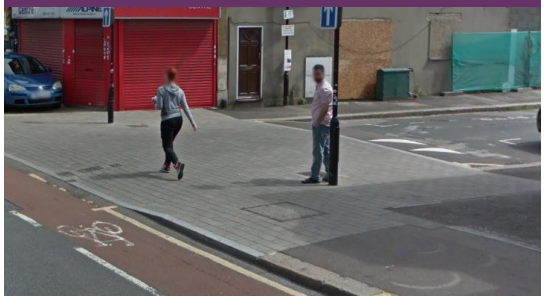


DWG Ref: CF-DR-C-0011

Continuous footway with medium sized setts, The Pavement, Clapham.

Google Maps

One-way street with ramped approach. Forrest Street, London.



Google Maps

Design Details : Layout Option 2

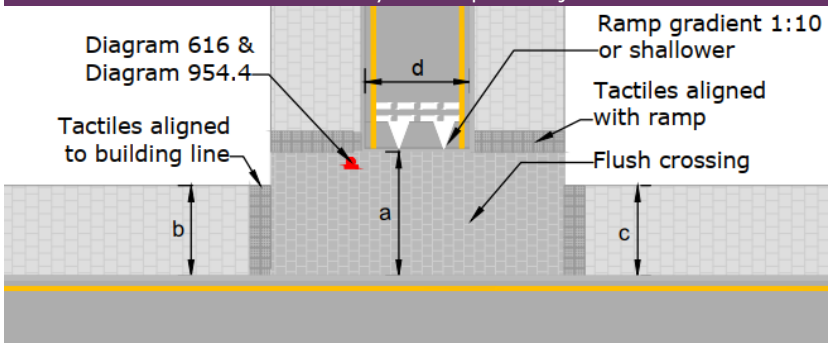
Continuous kerbline and no ramp on the major street side

- Suitable for one-way streets, but only one-way outbound onto a major street.
- The major street carriageway should rise gently to the intersection with the side road and have a maximum kerb height of 25mm.

Crossing width (a)

- The width over the continuous footway (a) should not be less than the width of the approaching footways (whichever is the greater of b or c)

Continuous footway no ramp on major street



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Side road width at rear of continuous footway(d)

This should generally be 4.5m or less. Not wider than 6.5m or narrower than 3.5m (to allow contraflow cycling). Where it is less than 5m and two-way vehicle flow is <20 p/h, tactile paving can be omitted.

One-way side road (exit only) ramp on side street and no ramp on major street, Kennington Park Rd / Magee St.

Jacobs

Google Maps, 2016

Relevant Factsheets:

Contra-flow Cycling on One-way Streets (C5)

Continuous Footways: Construction and Materials

Construction

For any location, the base must be designed to take into account of anticipated loadings, traffic volumes and ground conditions.

- Recommended minimum slab thickness of 75mm where vehicle overrun is anticipated, up to 150mm depths for higher vehicle flows.
- Consider reinforced small slab paving and rigid sub-base on side roads with frequent HGV use.

BS 7533 Part 12 should be referred to for sub-structure advice for footways that are overrun by vehicles.

Note that:

- ramps are particularly susceptible to compaction and may be constructed of setts or asphalt if vehicle count is above 60/hr or the junction is used by significant numbers of large vehicles.
- the structure should still allow for routine maintenance and services access, without needing to break paving slabs.

Pros - Good matching of materials and continuous, straight kerbline gives impression of continuity, small pavers stand up well to heavy vehicle loadings.
Cons – Footway drops to carriageway level (due to levels at front and rear of footway) - not ideal for mobility impaired people and reduces effect on vehicle turning speeds, edge of smaller pavers corresponding exactly with gateway means footway/roadway distinction is retained to some extent

City of Edinburgh Council

Street furniture used to provide some delineation and define a carriageway space for turning vehicles.

Jacobs

Surface materials

- Paving flags rather than asphalt should generally be used to ensure a visual contrast with the carriageway.
- Flag materials should visually match the adjacent footway to provide a continuous footway across the junction face.
- Smaller units with a reinforced base layer are recommended. The smaller units should be extended into adjacent 'pure' footway in order to avoid a clear footway/carriageway edge.
- Setts (new or reclaimed) should not generally be used for the main footway surface as they are usually a carriageway material. They may be used for ramps, see page 12. If used for the main footway surface in special circumstances, they should be flat topped.
- Where the footway under consideration has an asphalt surface, consult the Active Travel team for guidance on the materials to be used.

Relevant Factsheets:

Crossings at or near junctions (G5)

Minimising Street Clutter (P7)

Design Details : Construction

This sheet gives more information on where to use various construction materials/specifications according to likely loading.

Ramp construction

- The ramp should employ either identical blocks to the footway, or setts, precast units or blocks of similar tone to the footway. This is to help ensure visual continuity of the footway.
- In circumstances where Vehicle Count exceeds 60/hour, or especially if significant numbers of large vehicles are expected, setts or asphalt may be used.

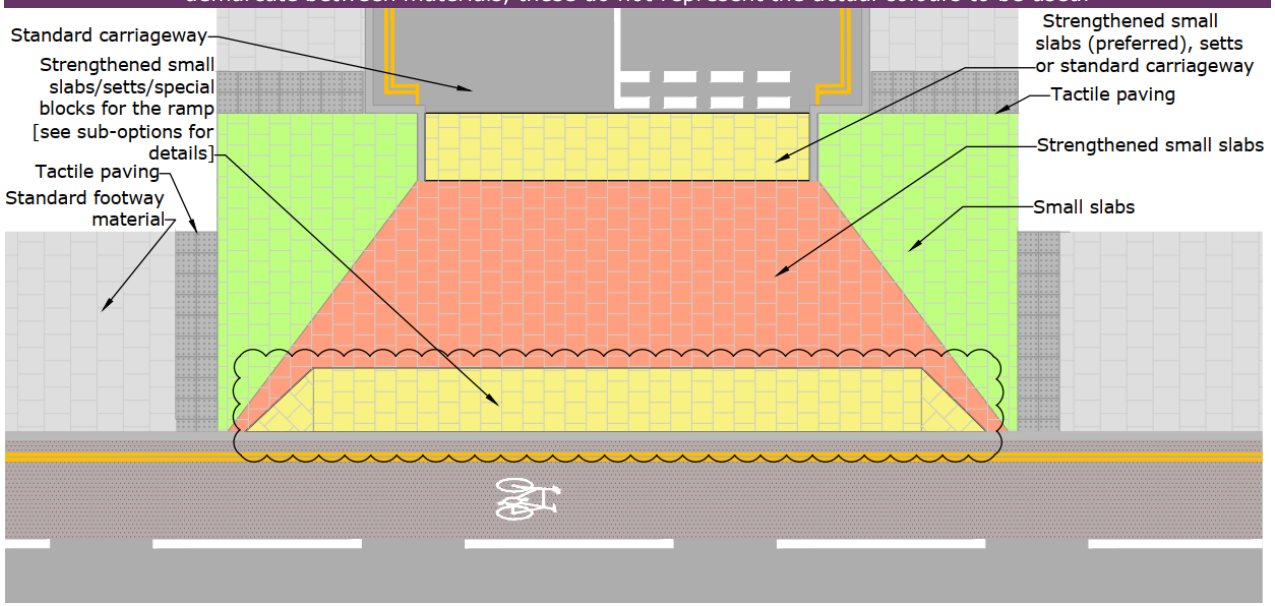
Two alternative ramp details available within Option 1 are described here.

Option 1a uses a dropped kerb with a ramp section built up from small element paving or special blocks.

Option 1b builds up the ramped section from setts or special blocks and employs quadrant kerbs.

Both of these options are acceptable and the most appropriate should be selected based on the location where it is being installed.

Continuous footway with ramped approach on both sides – material details. Note that the colours are only to demarcate between materials, these do not represent the actual colours to be used!



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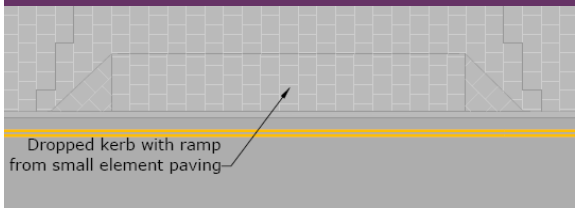
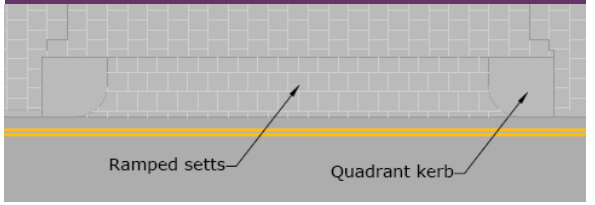
Option 1a – dropped kerb



DWG Ref: CF-DR-C-0023

Option 1b – ramped setts



DWG Ref: CF-DR-C-0024

Image References

Side Street Crossing types
Build out: Google Maps [ONLINE]. Available at: https://bit.ly/2k4wmKj [Accessed 17 May 2018]
Raised table: Google Maps [ONLINE]. Available at: https://goo.gl/maps/tKvtYsukkXU2 [Accessed 07 February 2017]
Continuous footway: The City of Edinburgh Council
Refuge island: The City of Edinburgh Council

Uncontrolled Drop Kerb Crossings
Bruntsfield: The City of Edinburgh Council
Kirkliston: The City of Edinburgh Council

Raised Tables / Build Outs
Build out: Google Maps [ONLINE]. Available at: https://goo.gl/maps/78ehpQMP73B2 [Accessed 07 February 2017]
Raised table: TfL Streetscape Guidance [ONLINE]. Available at: https://consultations.tfl.gov.uk/policy/streetscape-guidance/user_uploads/draft-streetscape-guidance--all-sections-.pdf [Accessed 09 November 2017]

Continuous Footways
Top Image: Google Maps [ONLINE]. Available at: https://goo.gl/cXZnN3 [Accessed 09 November 2017]
Bottom Image: Jacobs

Layout and Ramp Gradients
Images: The City of Edinburgh Council

Design Details: Option 1
The Pavement, Clapham: Google Maps [ONLINE]. Available at: https://goo.gl/oRfn8a [Accessed 17 November 2017]
Forrest Street: Google Maps [ONLINE]. Available at: https://goo.gl/sEpCe5 [Accessed 20 November 2017]

Design Details: Option 2
Left Image: Jacobs
Right Image: Google Maps [ONLINE]. Available at: https://goo.gl/maps/k217SMPCunG2[Accessed 05 December 2016]

Construction and Materials
Top Image: The City of Edinburgh Council
Bottom Image: Jacobs

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